

CLAIMS

1. A numerical control apparatus for controlling a machine tool comprising:

means for setting and registering any command, selected from among a plurality of commands described in a program handled by the numerical control apparatus, as a time data command for storing a time at which original contents of the command are executed;

clock means for updating a current time and outputting an updated current time;

determination means for determining whether or not the command read from the program during execution of the program is a time data command set and registered;

time data storage means; and

means for, when the read command is determined to be the time data command by said determination means, acquiring the current time from the clock means, apart from execution of the original contents of the command, and writing the acquired time as an execution time to said time data storage means.

2. A numerical control apparatus for controlling a machine tool comprising:

means for setting and registering any command, selected from among a plurality of commands described in a program handled by the numerical control apparatus, as a reference time data command for storing a time at which original contents of the command are executed as a reference time;

means for setting and registering a command, different from said selected command, as an elapsed time data command for storing elapsed time from the reference time at which the original contents of the command are executed;

clock means for updating a current time and outputting an updated current time;

determination means for determining whether or not a command read from the command program during execution of the program is a command set and registered;

time data storage means;

means for, when determined to be the reference time data command set and registered by the determination means, acquiring the current time from the clock means, apart from execution of the original contents of the command, and writing the acquired time to a time data storage means as a reference time; and

means for, when determined to be the elapsed time data command set and registered by the determination means, acquiring the current time from the clock means apart from the execution of the original contents of the command, calculating the elapsed time from the current time and the reference time and writing the calculated time to said time data storage means as an execution elapsed time.

3. A numerical control apparatus for controlling a machine tool comprising:

means for setting and registering any command, selected

from among a plurality of commands described in a command program handled by the numerical control apparatus, as an elapsed time data command for storing elapsed time;

timekeeping means for measuring time;

determination means for determining whether or not the command read from the command program during execution of the command program is an elapsed time data command set and registered;

time data storage means; and

means for, when determined to be the elapsed time data command by the determination means, acquiring the elapsed time from the execution time of the last elapsed time data command, apart from the execution of the original contents of the elapsed time data command, based on said timekeeping means and writing the acquired time to said time data storage means as the execution elapsed time.

4. A numerical control apparatus for controlling a machine tool comprising:

means for setting and registering any command, selected from among a plurality of commands described in a command program handled by the numerical control apparatus, as a reference time data command for storing the time at which the original contents of the command are executed as a reference time;

means for setting and registering a command, different from the selected command, as an elapsed time data command

for storing elapsed time from the reference time at which original contents of the command are executed;

timekeeping means for measuring time;

determination means for determining whether or not the command read from the command program during the execution of the program is a command set and registered;

time data storage means;

means for, when determined to be the reference time data command by the determination means, causing the timekeeping means to start measuring time, apart from the execution of the original contents of the command; and

means for, when determined to be the elapsed time data command set and registered by the determination means, acquiring the elapsed time measured by the timekeeping means, apart from the execution of the original contents of the command, and writing the acquired time to said time data storage means.

5. The numerical control apparatus according to claim 4, wherein:

said timekeeping means is comprised of clock means for outputting time; and

said means for writing the execution elapsed time to the time data storage means reads, when determined to be the command set and registered, the time from the clock means and write the read time to said storage means, and also acquires the elapsed time from a difference between the time read out by

the clock means this time and the time stored last time so as to write the acquired time as the execution elapsed time.

6. A numerical control apparatus for controlling a machine tool comprising:

means for setting and registering any command, selected from among a plurality of commands described in a command program handled by the numerical control apparatus, as an elapsed time data command for storing elapsed time;

timekeeping means for measuring time;

determination means for determining whether or not the command read from the command program during execution of the program is an elapsed time data command set and registered;

time data storage means: and

means for, when determined to be the elapsed time data command by the determination means, reading the measured time from the timekeeping means, apart from the execution of the original contents of the elapsed time data command, writing the read time to said time data storage means as the execution elapsed time and resetting the timekeeping means to start time measuring.

7. The numerical control apparatus according to any one of claims 1 to 6, comprising:

means for determining whether the original content of the command set and registered is a program annotation portion

itself or the command having the program annotation portion described in the same block as the command; and

means for, when determined to have the program annotation portion, writing a comment registered as the program annotation portion together to the time data storage means.

8. The numerical control apparatus according to any one of claims 1 to 6, comprising means for displaying the data to be stored by the time data storage means on a display unit of the numerical control apparatus.

9. The numerical control apparatus according to any one of claims 1 to 6, comprising communication means for outputting the data to be stored by the time data storage means from the numerical control apparatus to the outside.